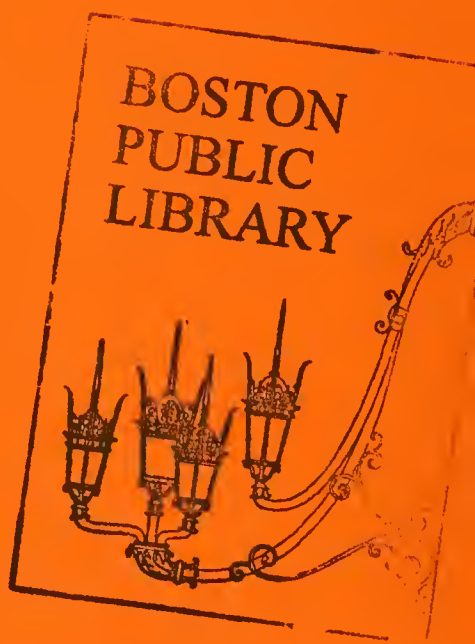
Final Analysis and Conclusions

BOSTON PARK PLAZA CIRCULATION STUDY



Prepared for the
BOSTON REDEVELOPMENT AUTHORITY

By Barton-Aschman Associates, Inc.

Attached for your information is a copy of the final report of the Park Plaza Circulation Study conducted by Barton-Aschman Associates, Inc. The work was done in cooperation with BRA staff, the Traffic and Parking Department, the Mayor's Office and representatives of interest groups, including the Civic Advisory Council.

The study concludes that the most satisfactory circulation plan for eliminating the Eliot/Providence Street traffic through the project is a plan, Alternative 2, which routes traffic around the site via new Charles Street, Boylston Street and Arlington Street back to St. James Avenue. The elimination of the existing Eliot/Providence Street link is important to the project so that an auto-free plaza and better development possibilities are created.

The major interested parties agree with the concept of the favored alternative and no insurmountable problems are foreseen in working out implementation details.

Final Analysis and Conclusions
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August 1977

FINAL ANALYSIS AND CONCLUSIONS
BOSTON PARK PLAZA
CIRCULATION STUDY

Prepared for the
Boston Redevelopment Authority

By Barton-Aschman Associates, Inc.
Evanston, Illinois

August, 1977

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1. INTRODUCTION

The Boston Park Plaza Circulation Study was conducted to determine the consequences of various roadway alternatives resulting from the closure of Providence Street and Columbus Avenue between Arlington and Broadway in the Park Square area. The closure of these streets will result from the construction of the Park Plaza urban renewal project which incorporates an auto-free zone bounded by Boylston Street on the north, New Charles Street on the east, Stuart Street on the south, and Arlington Street on the west. The end product of this study is not a precise recommendation for one specific alternative, because the evaluation factors used to compare the viable alternatives were not weighted, that is, the trade-offs among the various evaluation factors will vary by interest group. The purpose of this study, then, and especially this final analysis and conclusion, was to provide a sound technical basis for evaluation of the viable alternatives resulting from the Phase I analysis, which is summarized below.

The final evaluation process addressed four alternatives (as opposed to the three alternatives originally envisioned) at a level of detail sufficient to choose among the alternatives but not at a level of detail which will directly allow implementation of the chosen alternative (final design engineering and analysis must be performed for the chosen alternative prior to implementation). The purpose of this analysis was to determine the effect that relocating one specific traffic movement would have on the street system generally and on other traffic flows. The traffic movement which will be affected by the closure of Providence Street and Columbus Avenue between Arlington and Broadway is the outbound (westbound) movement from Stuart/Kneeland Streets. Various means of handling this movement will, of course, affect other major traffic flows in the Park Square area and will have an impact on the street system.

SUMMARY OF PREVIOUS FINDINGS

The Phase I analysis for the Boston Park Plaza Circulation Study provided a subjective evaluation of numerous roadway alternatives designed to handle the relocated traffic flow caused by the closure of Providence and Columbus Avenue in the Park Plaza area. This analysis was based upon the expected 1985 traffic flow in the Park Square area resulting from the growth of through-traffic as well as additional traffic generated by Park Plaza development. Several methods for measuring the impact on the street system were utilized to compare the various alternatives. The travel patterns to and from the proposed development were analyzed in terms of the various alternatives. The basis upon which the Phase I analysis and this more detailed analysis were performed is an origin-destination survey which was conducted in March, 1977, to determine the detailed traffic flow patterns in the area. These data provided the base information for an analysis of existing and future traffic volumes and street system. Based upon the results of the Phase I analysis, four alternatives were chosen by the City and other interested groups for detailed evaluation:

Alternative 1 - EIS Scheme
Alternative 2 - English Boylston
Alternative 3 - Boylston Reversed
Alternative 4 - Arlington Reversed

The detailed evaluation process is described below.

METHODOLOGY

The process utilized in this final analysis was a continuation of the iterative process which began in the subjective Phase I portion of this study. The process utilized in this detailed analysis is based upon rigorous traffic assignments resulting from an estimate of 1985 through-traffic and the additional traffic on the street system that would be generated by the proposed Park Plaza development.

Estimates of through-traffic volumes were based upon the most recent traffic counts available which represent existing conditions plus an additional 10 percent for projected through-traffic growth by 1985.

The most recent traffic counts were taken for each individual intersection and factored by 10 percent to represent 1985 traffic. Since these traffic counts were made independently by the City of Boston at varying times, they do not exactly balance from intersection to intersection. Each set of counts was checked for consistency, however, and represents the best data now available. In the situations where the volumes between intersections do not exactly balance the volume difference is either minor or can be explained as due to entering and exiting traffic along the street. The additional traffic resulting from the Park Plaza development was estimated based upon a detailed analysis of the existing traffic-generation characteristics of the Park Square area compared to the traffic-generation characteristics of the proposed Park Plaza development.

The traffic generated by the proposed development is based upon projected construction and demolition as described in the document Park Plaza Urban Renewal Project, Final Supplemental Environmental Impact Report. This development comprises 230,000 square feet of existing space to be retained and 2,495,000 square feet of new construction including:

155,000 square feet	- Retail and Entertainment
1,115,000 square feet	- Offices
300,000 square feet	- Apartments
360,000 square feet	- Parking (not including the 180,000 square feet of subgrade parking)
335,000 square feet	- Hotel

Traffic moving to and from the development was assigned to the street system based upon the origin-destination information collected in the field surveys in the Park Square area in March, 1977. This rigorous traffic assignment and subsequent analysis of the required geometrics for each alternative provided the basis for evaluation. Since each alternative which was examined affected the traffic flow in a unique and significant way, projected volumes at each intersection may be different from those in the existing situation.

For each of the four alternatives chosen for final analysis, a set of geometric sketches was developed which would provide adequate traffic service in 1985. The criteria for adequate traffic service are based upon a situation where the Level of Service is between C and D. This represents a condition where 30 to 70 percent of the signal cycles are fully loaded during the peak travel periods. This full loading of signal cycles between 30 and 70 percent of the time during the peak period can be interpreted as reflecting a congested condition. This is considered to be a reasonable target for the Park Square area since these conditions will reflect a traffic situation equal to or better than that experienced today. The level of service which reflects fully loaded signal cycles between 30 and 70 percent of the time during peak periods (between Level of Service C and D) can be described as a situation where a volume of 500 vehicles per hour, per lane, is experienced. This criterion of 500 vehicles per hour, per lane, must be separated by major movement (with left-turning traffic considered separately) and can then be used to determine the lane requirements to realize the traffic service (Level of Service C and D, fully loaded signal cycles 30 to 70 percent of the time during peak periods) described above. These criteria were used in this analysis to determine the number and configuration of lanes required for each alternative. While these criteria do not represent as rigorous a capacity analysis as would be reflected in a detailed Capacity Manual analysis of each intersection, they are based upon a generalized form of the Capacity Manual procedures and directly reflect the level of service criteria expressed in the Highway Capacity Manual.

Based upon the roadway geometrics resulting from the above-described analysis, an unweighted comparison matrix was developed whereby, for each of 23 evaluation criteria, various effectiveness measures were determined for each of the four alternatives. This comparison matrix gives a detailed picture of the positive and negative aspects of each of the four alternatives analyzed in this final stage of the circulation study. While the geometric analysis is based upon traffic assignments for morning and evening peak travel periods, the ramifications of mid-day traffic flow patterns and the peak period evening traffic flow demands in the theatre district were also evaluated via the evalua-

tion matrix for each of the four alternatives. The analysis procedure is outlined in Table 1. This analysis deals with overall volumes to and from the proposed development but does not address the site-specific question of location of access points. Location of ingress and egress points can only be analyzed after the overall movements schemes - as presented in this analysis - have been determined, and detailed site plans have been developed.

Table 1
ANALYSIS PROCEDURE

1. Determine traffic flow pattern for each alternative.
2. Estimate 1985 traffic volumes for each alternative.
3. Perform capacity analysis to determine necessary intersection configurations for each alternative.
4. Develop geometric sketches for each alternative.
5. Complete evaluation matrix for each alternative based on the required 1985 geometrics.
6. Analyze evaluation matrix and develop conclusions.

2. TRAFFIC PROJECTIONS AND RESULTING GEOMETRIC REQUIREMENTS

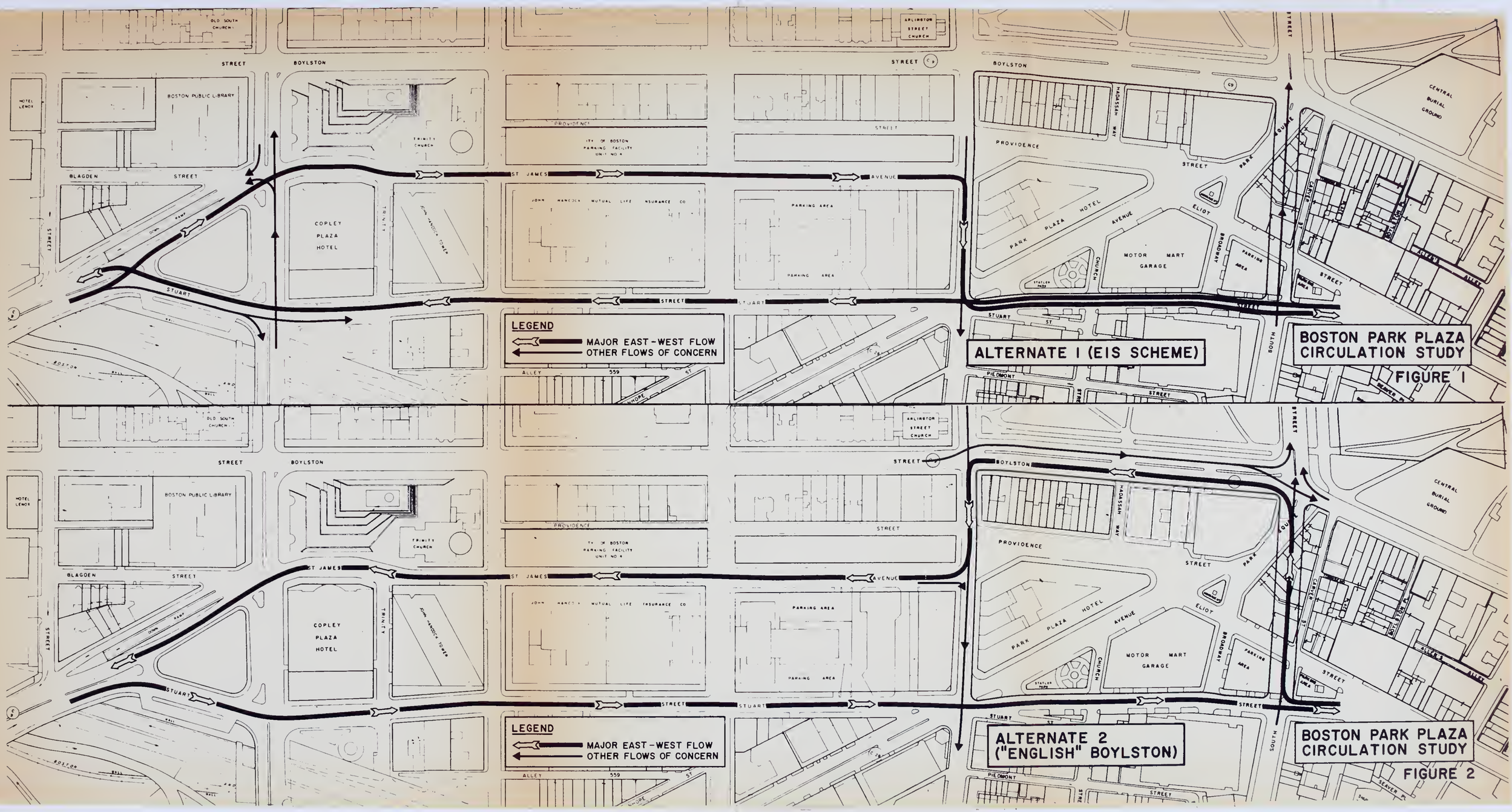
The four alternatives evaluated in this final analysis are as follows:

Alternative Number 1 (EIS Scheme) Figure 1 shows the major traffic flow patterns for Alternative Number 1. This alternative relocates the outbound Providence and Columbus Avenue movement in the Park Square area to two-way Stuart Street which runs to Arlington Street. Outbound traffic then proceeds on Stuart Street to Dartmouth Street. Inbound traffic in Alternative Number 1 runs along St. James and transitions back to two-way Stuart Street via Arlington Street.

Alternative Number 2 (English Boylston, Arlington to Charles) This relocates the Providence Street-Columbus Avenue outbound flow to Boylston Street via New Charles Street, then back to Columbus Avenue and St. James Avenue via Arlington Street (see Figure 2). In this alternative, Boylston Street would perform as a two-way facility between Arlington Street and New Charles Street with the movements running "English" fashion in relation to each other.

Alternative Number 3 (Boylston Reversed) Figure 3 shows the major traffic flow for Alternative Number 3, which relocates the outbound Providence Street and Columbus Avenue traffic to a reversed (outbound) Boylston Street via New Charles Street. The inbound Boylston Street traffic is relocated to St. James Avenue via Dartmouth Street.

Alternative Number 4 (Arlington Reversed) Figure 4 shows the major traffic flow for Alternative Number 4, which relocates the outbound Providence Street-Columbus Avenue traffic flow to two-way Stuart Street, then to St. James Avenue via a reversed Arlington Street (northbound) between Stuart Street and Boylston Street. In this alternative the southbound Arlington Street traffic flow is relocated via eastbound Boylston, southbound New Charles Street and Stuart Street.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HOTEL LENOX
BLAGDEN STREET
BOYLSTON STREET
ST JAMES AVENUE
STUART STREET
PROVIDENCE STREET
PARK STREET
ELIOT STREET
BROADWAY
CHURCH
CHARLES STREET
PIEDMONT STREET
LEGEND
MAJOR EAST-WEST FLOW
OTHER FLOWS OF CONCERN
ALTERNATE 1 (EIS SCHEME)
BOSTON PARK PLAZA CIRCULATION STUDY
FIGURE 1
ALTERNATE 2 ("ENGLISH" BOYLSTON)
BOSTON PARK PLAZA CIRCULATION STUDY
FIGURE 2

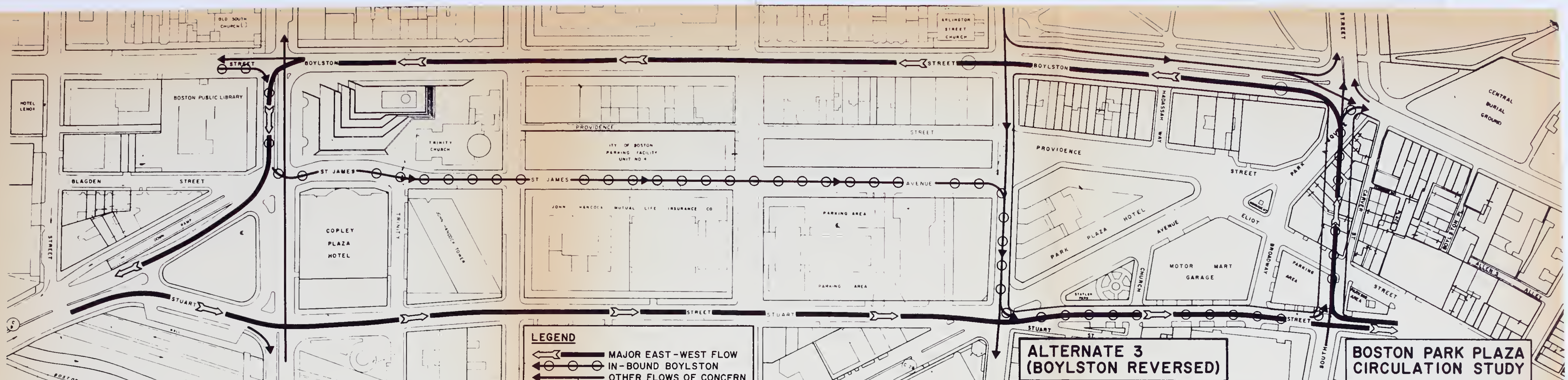


FIGURE 3

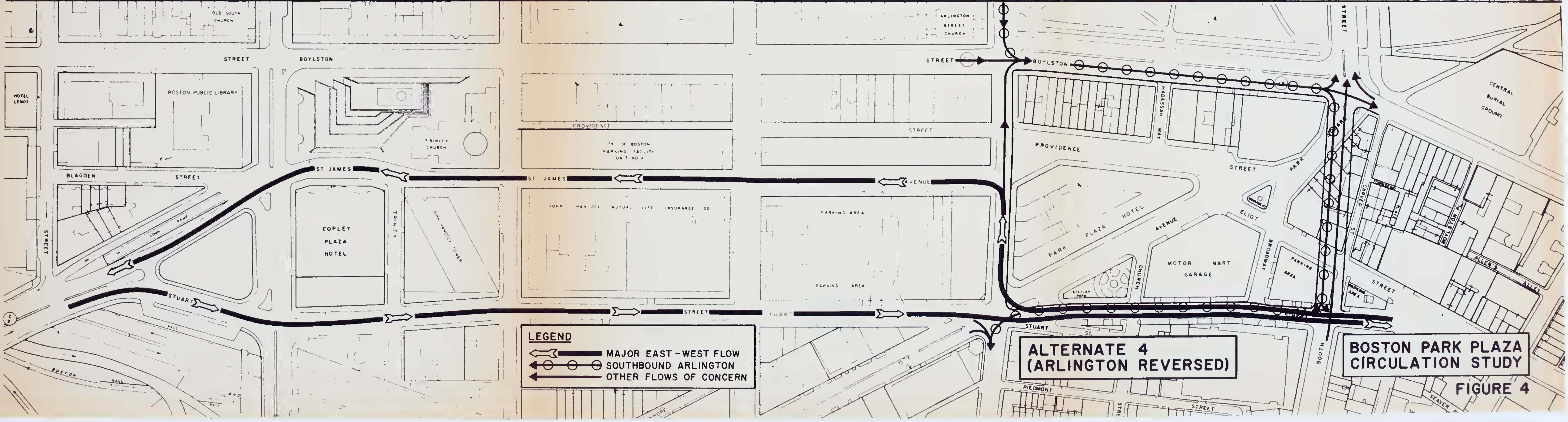


FIGURE 4

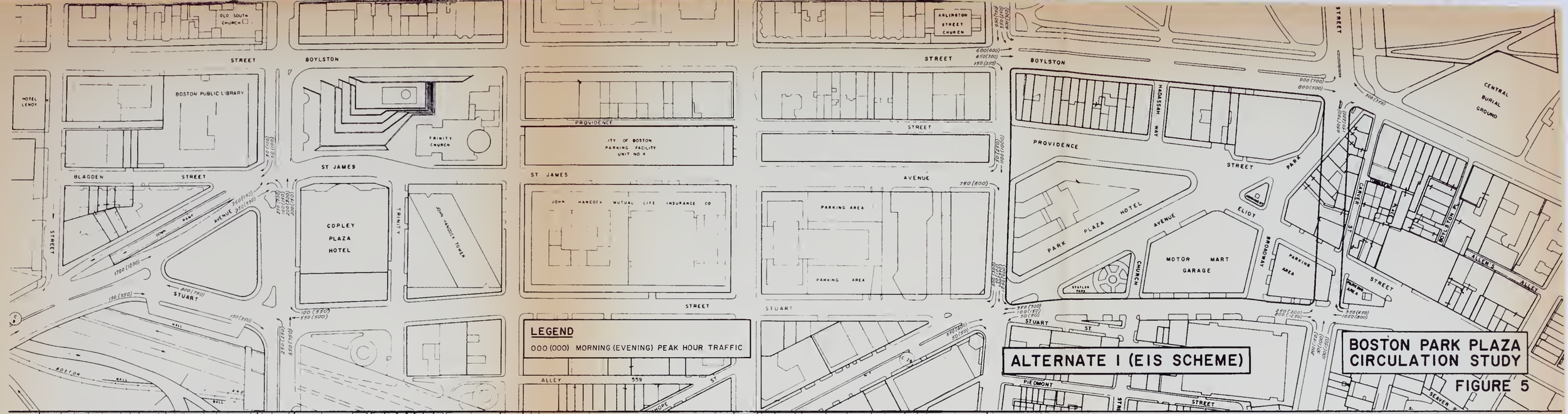
Each of these individual alternatives affects one or more existing traffic flows and each, therefore, has associated with it a unique traffic assignment pattern resulting in the projected 1985 traffic volumes shown in Figures 5 through 8. These traffic projections can be compared to the existing traffic flow in the area which was presented in the previous report for the Park Plaza traffic analysis. It is evident that, while the overall traffic demand in the area will increase by 1985, the resulting traffic volumes for each individual intersection may be quite different, depending upon which alternative is chosen (thereby affecting which major traffic flows are modified). The criteria previously described were utilized to develop a set of geometric and operational changes necessary to implement each alternative. This set of geometric and operational changes enabled the detailed evaluation matrix to be completed for each alternative. The geometric and operational changes are shown in Figures 9 through 12 and require the following: (All alternatives will require six 11-foot moving lanes of traffic on Stuart Street east of Charles Street for peak-hour conditions).

Alternative Number 1 (EIS Scheme) This requires construction of Charles Street (52 feet wide) between Boylston and Stuart to carry northbound traffic. It requires Stuart Street reconstruction to 66 feet, carrying easterly and westerly traffic from Arlington Street to Kneeland Street. Reconstruction of the Stuart/Huntington/Dartmouth/St. James area is required as shown in Figure 9. This requires improvement of Arlington Street at the Stuart Street intersection. Stuart Street functions one-way west. St. James functions one-way east. All other streets function in the existing pattern.

Alternative Number 2 (English Boylston) This requires construction of Charles Street (52 feet wide) between Stuart and Boylston to carry northbound traffic. It requires relocation of the Boylston Street median between Arlington and Charles. Improvement of Arlington at St. James and Boylston at Charles is required. All other streets function in the existing pattern.

Alternative Number 3 (Boylston Reversed) This requires construction of Charles Street (52 feet wide) between Stuart and Boylston to serve northbound traffic. It requires improvement of Arlington at Stuart and relocation of the Dartmouth Street median between Boylston and St. James. Boylston would serve traffic westbound to Dartmouth; St. James and Stuart would serve traffic eastbound to Arlington with Stuart Street serving eastbound traffic between Arlington and Charles. All other streets function in the existing pattern.

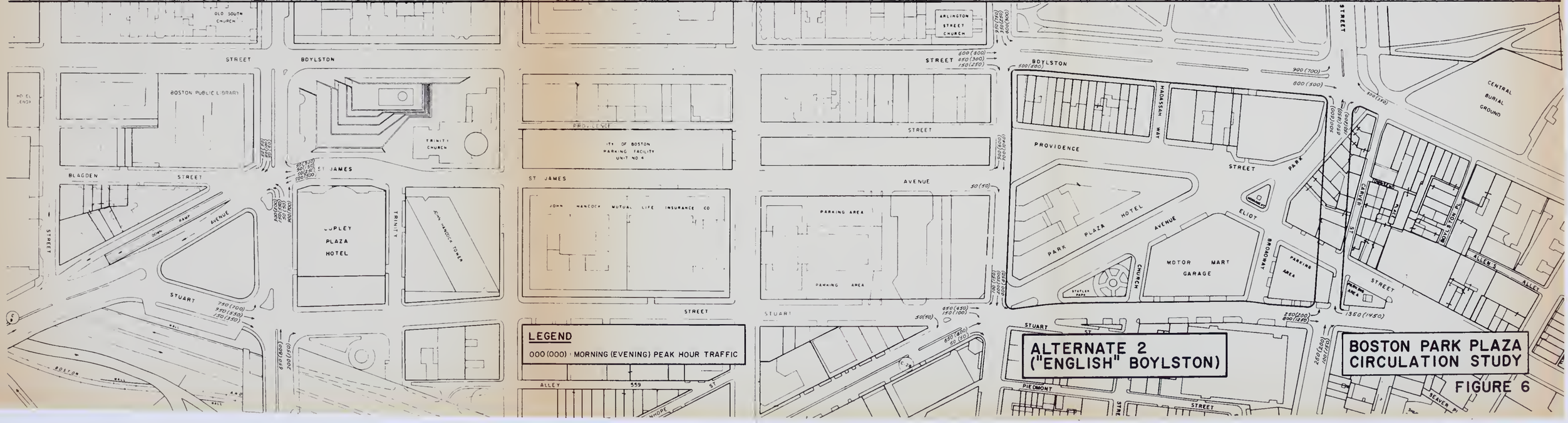
Alternative Number 4 (Arlington Reversed) This requires construction of Charles Street between Stuart and Boylston (60 feet at Stuart, 52 feet at Charles) to serve northbound and southbound traffic. It requires removal of the Boylston Street median between Arlington and Charles to serve the Arlington-Boylston-Charles (southbound) weave. Reconstruction of Stuart Street (66 feet) would be required between Charles and Arlington. Arlington would serve northbound traffic between Stuart and Boylston. All other streets would function in the existing pattern.



ALTERNATE 1 (EIS SCHEME)

BOSTON PARK PLAZA CIRCULATION STUDY

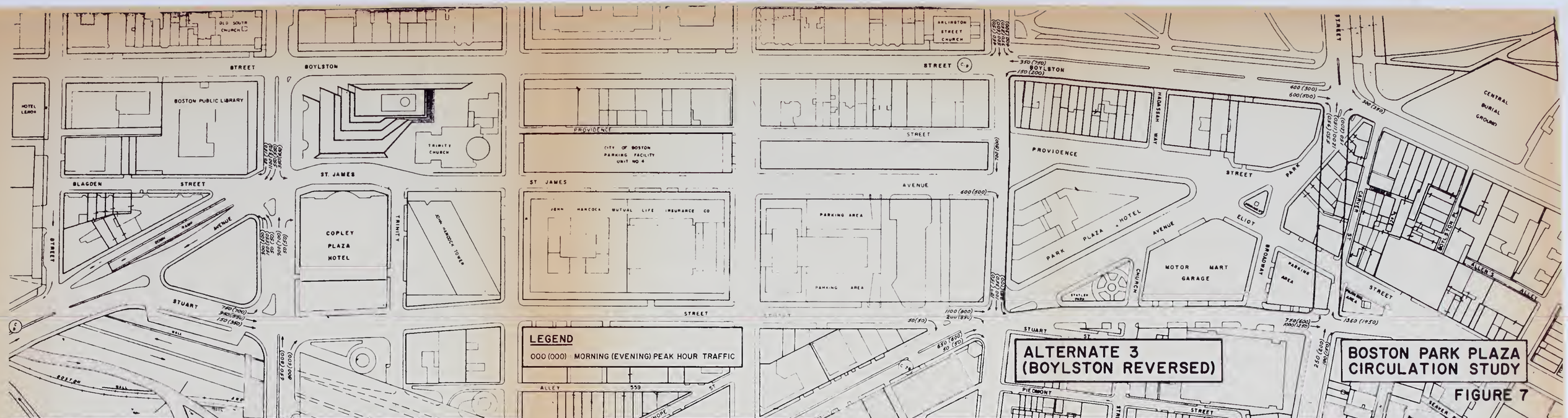
FIGURE 5



ALTERNATE 2
("ENGLISH" BOYLSTON)

BOSTON PARK PLAZA CIRCULATION STUDY

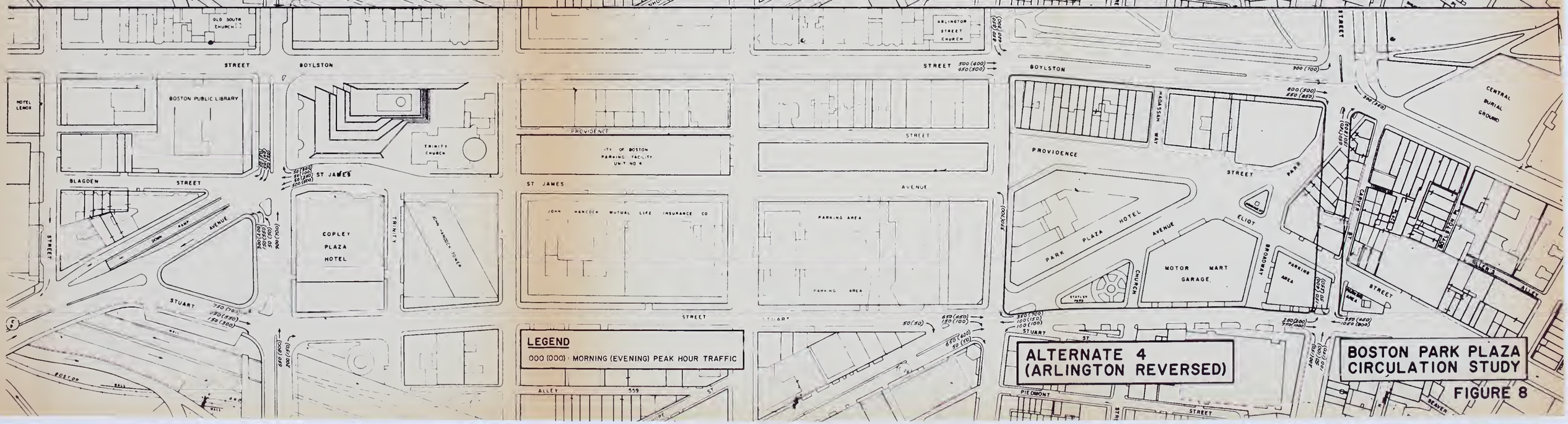
FIGURE 6



ALTERNATE 3
(BOYLSTON REVERSED)

BOSTON PARK PLAZA
CIRCULATION STUDY

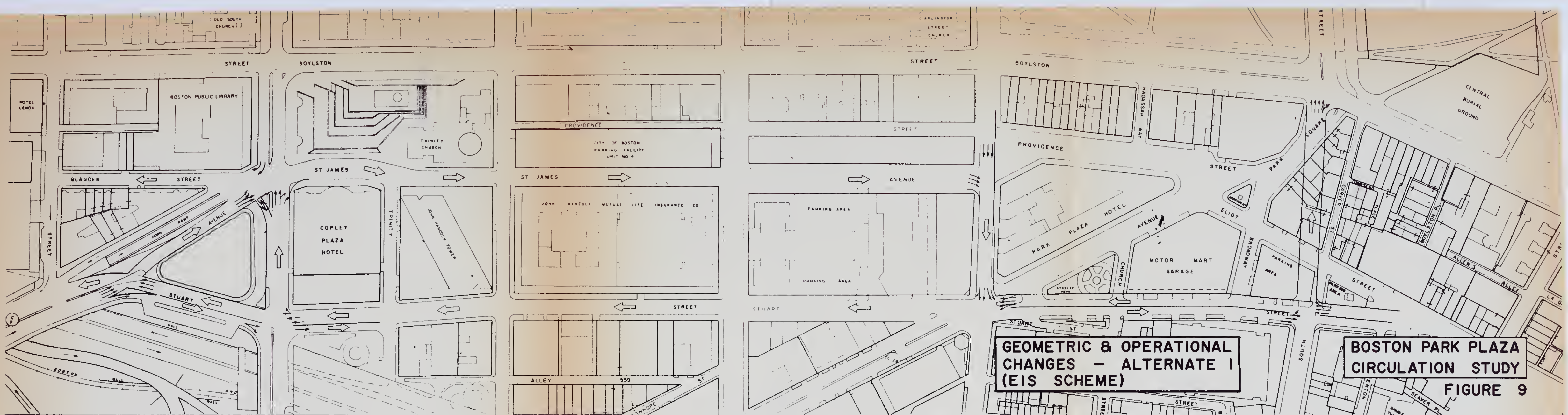
FIGURE 7



ALTERNATE 4
(ARLINGTON REVERSED)

BOSTON PARK PLAZA
CIRCULATION STUDY

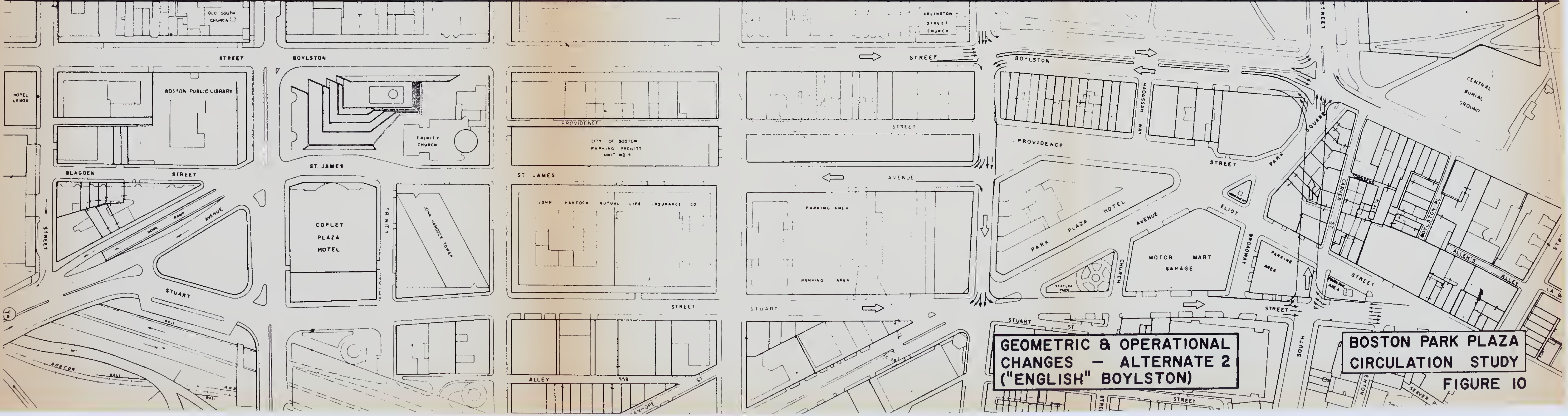
FIGURE 8



GEOMETRIC & OPERATIONAL CHANGES – ALTERNATE 1 (EIS SCHEME)

BOSTON PARK PLAZA CIRCULATION STUDY

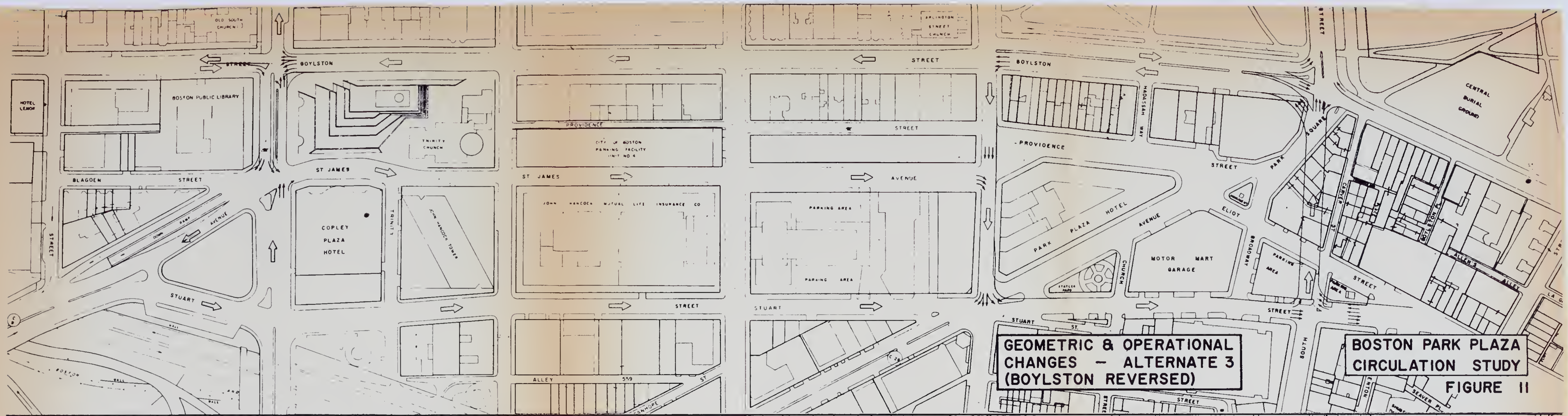
FIGURE 9



GEOMETRIC & OPERATIONAL CHANGES – ALTERNATE 2 ("ENGLISH" BOYLSTON)

BOSTON PARK PLAZA CIRCULATION STUDY

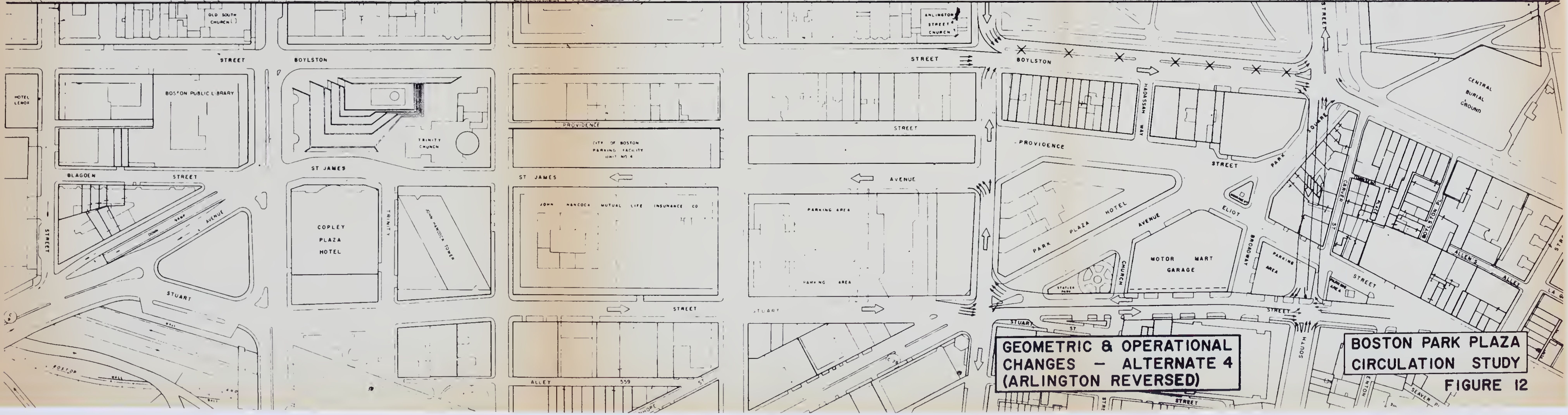
FIGURE 10



GEOMETRIC & OPERATIONAL CHANGES – ALTERNATE 3 (BOYLSTON REVERSED)

BOSTON PARK PLAZA CIRCULATION STUDY

FIGURE 11



GEOMETRIC & OPERATIONAL CHANGES – ALTERNATE 4 (ARLINGTON REVERSED)

BOSTON PARK PLAZA CIRCULATION STUDY

FIGURE 12

3. EVALUATION

The evaluation matrix enclosed with this report provides a convenient means of comparing the four final alternatives for the Boston Park Plaza Circulation Study. For each of 46 evaluation measures, various factors have been computed for each alternative. While these findings are shown on the evaluation matrix, the following discussion elaborates on the findings and the comparison among the alternatives based upon each unique measure. The numbers referenced below refer to the numbered measures in the accompanying evaluation matrix.

1. Extensive improvements will be required for Alternatives 1 and 4. The improvements required for Alternatives 2 and 3 are relatively minor.

2. The loading areas affected in Alternative 1 are along Stuart between Arlington and Charles. These loading areas will be affected due to the two-way nature of the street and the heavy volumes occurring along this street segment. In Alternative 3, the loading areas along Boylston between Arlington and Charles will be affected due to the necessity of utilizing the curb lane on the south side of Boylston for moving traffic (three westbound lanes required). Alternative 4 will affect the loading areas along Stuart Street between Arlington and Charles Streets due to the two-way nature of the street and the heavy traffic volumes experienced.

3. Alternative 1 will negatively affect access points along Stuart between Arlington and Charles due to the necessity to eliminate left turns which would conflict with the heavy traffic volume. A similar situation exists for Alternative 4.

4. The major movement which proceeds from west-to-east would require two additional turns in Alternative 1. In Alternative 2, three additional turns would be required for the major east-to-west movement. For Alternative 3, three additional turns would be required for the east-to-west major movement and two additional turns would be required for the west-to-east major movements. In Alternative 4, two additional turns would be required in the west-to-east major movement and four additional turns would be required in the north-to-south major movement.

5. The vehicle miles of travel in the area are represented by the estimated increase in annual vehicle miles of travel. These estimates are based upon the additional distance required to traverse the Park Square area due to the roadway modifications associated with each alternative.

6. The increase in travel time for major traffic flows is expressed in annual vehicle hours of travel and is the result of two factors:

    a. Additional travel distance

    b. Additional travel delay caused by the necessary wait at additional traffic signals

7. For Alternative 1, four additional stops are required for major traffic flows with two significant additional merges, one along Arlington for the eastbound St. James/Arlington/Stuart movement and one along Dartmouth for the Stuart Street/Turnpike traffic. For Alternative 2, one additional stop for the major traffic flows is required. For Alternative 3, two additional stops for the major traffic flows are required as well as an additional merge along Arlington for the Stuart Street/Arlington Street/St. James Avenue traffic flow. In Alternative 4, two additional stops are required for major traffic flows along with one additional merge for the traffic flow proceeding from Arlington to Boylston to Charles to Stuart to Arlington.

8. Alternatives 1, 2 and 4 are expected to cause no significant increase in vehicle miles of travel through sensitive areas. While no specific traffic assignments were made to local streets, it was concluded that Alternative 3 would cause an increase in travel in the Back Bay area of approximately 100,000 annual vehicle miles due to the necessity of utilizing local streets for the westbound circulation movement within the Boylston Street/Back Bay area.

9. Alternatives 1 and 4 would require the prohibition of all parking along Stuart Street between Arlington and Charles Streets. Alternative 2 requires the prohibition of parking along the north side of Boylston Street (adjacent to the Public Garden between Arlington and Charles Streets).

10. Alternative 2 is considered to be the most feasible from all points of view, with Alternatives 1 and 4 being next in line in terms of workability. Alternative 1 would create problems due to the necessary weaving movements. Alternative 4 would be less feasible due to the significant diversion of southbound Arlington traffic. Alternative 3 is considered to be the least feasible in terms of public acceptance due to the reversal of Boylston and the resulting dramatic change in traffic flow characteristics in the Boylston Street/Back Bay area.

11. Alternatives 2 and 4 would <u>decrease</u> the number of total conflict points for major traffic movements by one, with Alternatives 1 and 3 resulting in no net change.

12. Alternatives 1 and 2 would have no significant effect on streets outside of the Park Square area. Alternatives 3 and 4 would negatively affect streets in the Back Bay area, with Alternative 3 affecting east-west movement through the Back Bay area and Alternative 4 affecting north-south movement through the Back Bay area.

13. Alternatives 2 and 3 would require no decrease in the existing sidewalk widths. Alternatives 1 and 4 would require the removal of the northerly sidewalk along Stuart Street between Arlington and Charles Streets and also would require narrowing the southerly sidewalk along Stuart Street between Arlington and Charles Streets. Provision of adequate pedestrian safety along the north side of Stuart Street, between Arlington and Charles, could be achieved in two ways. First, a second-story pedestrian bridge could be constructed parallel with Stuart Street adjacent to the Motor Mart Garage. While this does not represent the best situation in terms of aesthetics, it is considered to be the least costly in terms of construction and right-of-way. This alternative may be possible if incorporated into the redevelopment plans of the Park Plaza area. The second method of providing for safe pedestrian movement along the north side of Stuart Street is to develop an arcade within the Motor Mart Garage adjacent to the present location of the sidewalk along Stuart Street. The arcade would require purchase of a right-of-way easement as well as extensive construction. This alternative may be significantly better in terms of aesthetics and ease of use than the second-story pedestrian bridge; however, this alternative will be significantly more expensive. Since the first alternative (second-story pedestrian bridge) would be lower in cost and since these costs are more readily estimated, this alternative has been used for the construction cost comparison.

14. All alternatives will result in an improved crossing for pedestrians at the St. James-Arlington intersection. This improvement will only be realized for Alternatives 1 and 3, however, if a traffic signal is installed at that location. A signal located at St. James and Arlington must be coordinated with the Boylston/Arlington and Stuart/Arlington signals. If this coordination is possible, then the pedestrian and vehicular crossing at the St. James-Arlington intersection will be greatly improved in terms of traffic flow and safety characteristics. The improvement for pedestrians and vehicles will take place at St. James

and Arlington for Alternatives 2 and 4, however, without a traffic signal due to the simplified traffic flow patterns at this location for these alternatives.

15. Due to the increase in traffic volumes in the area by 1985 (which are relatively modest), it can be expected that pedestrian crossings will be somewhat less convenient and perhaps less safe. Each one of the alternatives affects essentially one street in this manner.

16. Due to the elimination of the Providence Street movement between Charles Street and Arlington Street, each alternative will affect emergency vehicle movement somewhat. Alternatives 1, 2 and 3 affect emergency vehicle traffic in essentially one direction with Alternative 4 affecting emergency vehicle traffic in two directions.

17. All alternatives are expected to affect this measure in relatively the same way, based upon the total increase in traffic demand in the Park Square area which is projected for 1985. This traffic increase will cause a somewhat greater restriction of emergency vehicle movement than now exists.

18. The generalized construction costs shown on the evaluation matrix represent a rough initial estimate of the construction required to implement each alternative. Specifically, the construction cost estimates for each alternative include the following:

Alternative 1:

1. Improve the Huntington/Stuart/Dartmouth/St. James intersections.

2. Widen Stuart between Arlington and Charles Streets.

3. Construct Charles Street between Boylston and Stuart.

4. Widen Arlington Street at Stuart.

5. Construct a pedestrian bridge (second-story sidewalk) over the northern edge of Stuart Street adjacent to the Motor Mart Garage.

Alternative 2:

1. Remove and relocate the Boylston Street median between Arlington and Charles Streets.

2. Widen Arlington at Stuart.

3. Increase radius at Boylston/Arlington.

4. Reconstruct the Boylston/Charles intersection.

5. Construct Charles Street between Stuart and Boylston, with more liberal radius at Stuart and Charles than Alternatives 1 and 4.

6. Increase radius at Arlington/St. James.

Alternative 3:

1. Reconstruct Dartmouth at St. James and Stuart.

2. Reconstruct the Charles/Boylston intersection.

3. Construct Charles Street between Boylston and Stuart, with more liberal radius at Stuart and Charles than Alternatives 1 and 4.

4. Widen Arlington at Stuart.

Alternative 4:

1. Construct Charles Street between Boylston and Stuart.

2. Widen Stuart between Arlington and Charles Streets.

3. Construct a pedestrian bridge (second-story sidewalk) over the northern edge of Stuart Street adjacent to the Motor Mart Garage.

4. Remove Boylston Street median between Arlington and Charles.

19. All alternatives will require additional right-of-way for the construction of Charles Street between Boylston and Stuart Streets. Since this construction will take place in coordination with the Park Plaza development, the actual cost of the right-of-way will depend on the specific negotiated characteristics of the total right-of-way situation in the Park Plaza area, which will involve not only right-of-way acquisition for Charles Street but also possible right-of-way abandonment for Providence Street, Columbus Avenue, Park Square and Broadway. Alternatives 1 and 4 would require the purchase of a right-of-way easement through the Motor Mart Garage if the "arcade" alternative is chosen rather than the "pedestrian bridge" alternative. All alternatives will require six moving lanes of traffic on Stuart Street east of Charles Street.

20. For Alternative 1, 18 percent of the traffic to and from Park Plaza would be negatively affected due to the necessity of the heavy weaving movement along Arlington. Alternative 2 would have no significant effect on traffic to and from Park Plaza. Alternative 3 would have a negative effect on approximately five percent of the traffic to and from Park Plaza due to the heavy traffic volumes along Stuart. Alternative 4 would have a similar effect on Park Plaza traffic to Alternative 3.

21. Stuart Street traffic would be negatively affected due to the heavy traffic volumes along Stuart Street between Arlington and Charles Streets for Alternatives 1 and 4. Alternatives 2 and 3 would have no significant effect on vehicles to and from Stuart Street.

22. Alternatives 1 and 4 would have a negative impact on pedestrian access along Stuart Street between Arlington and Charles due to the heavy two-way traffic volume. Alternatives 2 and 3 would have no significant effect on pedestrian access along Stuart Street.

23. The traffic volumes shown on the evaluation matrix (2,200 vehicles per hour for Alternative 1; 1,400 vehicles per hour for Alternative 2; 1,800 vehicles per hour for Alternative 3; and 2,000 vehicles per hour for Alternative 4) represent the heaviest volumes expected along Stuart Street between Arlington and Charles Streets in 1985.

24. Alternatives 1 and 2 are not expected to have any significant effect on vehicular access to and from the Boylston Street area. Alternative 3 will affect 100 percent of the vehicles moving to and from Boylston due to the reversal of the street. Alternative 4 will affect circulation to and from the Back Bay area from the Boylston Street area by modifying the Arlington Street area through movement pattern.

25. Alternative 1 is expected to have no significant effect on pedestrian access to the Boylston Street area. Alternative 2 will have a moderately negative impact on pedestrian access along Boylston between Arlington and Charles, since Boylston Street will be made a two-way facility in that segment. Alternative 4 should improve pedestrian access along Boylston between Arlington and Charles since this section would be made narrower under this alternative. Alternative 3 will affect pedestrian access somewhat adversely along Boylston between Arlington and Charles due to the two-way nature of Boylston under this alternative.

26. The range of vehicles per hour shown in the evaluation matrix for traffic volumes along Boylston represent the expected traffic demands between Dartmouth and Charles Streets.

27. Alternatives 1, 2 and 3 are expected to have no significant effect on theatre district travel. Alternative 4 may negatively affect theatre district travel due to a potential increase in southbound Tremont traffic which could be caused by a rerouting of southbound Arlington traffic due to the discontinuity in the southbound flow which would be affected by Alternative 4.

28. Alternatives 1, 2 and 3 are expected to have no significant effect on Tremont Street traffic. Alternative 4 may increase traffic for the above noted reasons.

29. Alternative 1 may negatively affect 30 percent of the traffic to the Tufts University Medical Center, which would be caused by a minor rerouting of traffic from Stuart to St. James from the west. Since St. James is one block farther north, slightly longer travel distances would result. Alternative 2 is expected to have no significant effect on traffic moving to and from Tufts Medical Center. Alternative 3 has a potential negative affect on the traffic accessing the medical center area from the west (30 percent). Alternative 4 may negatively affect 30 percent of the traffic to the Tufts Medical Center in a minor way due to the effect of Alternative 4 on Stuart Street.

30. Alternatives 1, 2 and 3 are expected to have no significant effect on traffic on Washington Street. Alternative 4 has a minor potential to increase traffic due to the Arlington Street discontinuity of flow with a possible traffic rerouting.

31. Alternative 1 will negatively affect the major portion of through-traffic along St. James Avenue due to the necessity of the weave on Arlington Street. Alternative 2 will have no significant effect on St. James Avenue traffic. Alternative 3 has a potential to improve St. James traffic access if St. James Avenue is redesignated as a local street (which is a possibility under Alternative 3, since Stuart Street could be considered to handle all eastbound flow now

using Boylston and Stuart Streets). Under Alternative 4, a major portion of the St. James Avenue through-traffic would be negatively impacted in a minor way due to the high volume of Stuart Street/ Arlington Street movement.

32. Each alternative will increase traffic along St. James Avenue somewhat, but Alternative 3 has the potential to decrease traffic if St. James Avenue is redesignated as a local street. This would, of course, increase the traffic along Stuart Street if St. James was no longer used for through-traffic movement.

33. Due to the traffic increases along St. James Avenue that would result from all alternatives, pedestrian access can be expected to be moderately worse in 1985.

34. Alternatives 1 and 2 are expected to have no significant effect on travel within the Back Bay area. Alternative 3 is expected to increase vehicle miles of travel in the Back Bay by approximately 100,000 vehicle miles per year due to the necessity of circulating eastbound traffic through the Back Bay which would be caused by the reversal of Boylston Street. This could especially affect the Back Bay streets between Boylston and Beacon Street (e.g., Marlborough St.). Alternative 4 may increase travel in the Back Bay area if travel patterns are modified due to the discontinuity in the Arlington Street movement.

35. Alternatives 1, 2 and 4 are expected to have no significant effect on vehicles moving to and from the Back Bay. Alternative 3 will modify travel patterns between the Back Bay and the downtown, since Boylston Street will no longer serve this movement, thereby making travel between the Back Bay and downtown less direct.

36. Approximately 30 percent of the vehicles accessing the John Hancock Garage would be impacted in a negative way by Alternative 1 due to a moderate increase in travel distance for access via Clarendon. Alternative 2 is expected to have no significant

effect on access to the John Hancock development. Alternative 3 will negatively affect approximately 40 percent of the vehicles access the John Hancock development due to the higher volumes along Stuart Street. Approximately 15 percent of the vehicles destined to the John Hancock development would be negatively impacted under Alternative 4 due to the discontinuity in the southbound flow along Arlington.

37. Each alternative would represent a modest increase in traffic flow on streets adjacent to the John Hancock development, as shown in the evaluation matrix.

38. Alternatives 1 and 4 can be expected to negatively impact virtually all vehicles accessing the 57 Development due to the significant increase in Stuart Street traffic volumes. A minor negative impact can be expected for approximately 40 percent of the traffic accessing the 57 Development for Alternatives 2 and 3 due to the additional travel distance for westbound traffic.

39. Traffic increase along Stuart Street is expected to be 200 percent greater than today's volumes for Alternative 1. For Alternative 2, the traffic increase along Stuart is expected to be 60 percent. For Alternative 3, the increase is expected to be 140 percent and for Alternative 4, the increase is expected to be 170 percent.

40. No alternatives are expected to significantly affect vehicle miles of travel in the Bay Village area.

41. A minor negative impact on traffic accessing the Bay Village from the west could be expected for Alternatives 1 and 3, due to longer travel distances. Alternative 2 is expected to have no significant effect on access to Bay Village; Alternative 4 would have a negative effect on access to Bay Village for traffic proceeding south along Arlington.

42. The only alternative expected to negatively affect access to the Central Business District would be Alternative 3, whereby Boylston Street would be eliminated as a facility for inbound flow to the Central Business District.

43. No alternatives are expected to significantly affect through-traffic volumes in the Central Business District.

44. No significant effect on pedestrian access is expected for Alternative 1. Alternatives 2 and 3 are expected to have a minor negative impact on traffic access to the Central Business District, since crossing Boylston Street between Arlington and Charles will be somewhat more difficult due to the proposed two-way nature of Boylston under Alternatives 2 and 3. A potential improvement in pedestrian access to the Central Business District could be expected under Alternative 4, since Boylston Street would be narrowed under this alternative.

45. Due to the location of the MBTA stations the effect on pedestrian travel to these facilities is similar (but less significant) than the effect on Central Business District access noted above.

46. Alternatives 1 and 3 are expected to have a minor negative impact on access to the Massachusetts Turnpike due to the necessary weave at Dartmouth and Stuart Streets in Alternative 1 and the rerouting which would occur along Boylston Street requiring additional travel distance for westbound traffic to access the Massachusetts Turnpike under Alternative 3. Alternatives 2 and 4 are expected to have no significant impact on access to the Turnpike.

4. ANALYSIS SUMMARY AND CONCUSION

As previously stated, since the evaluation matrix represents unweighted factors, a precise recommendation based upon the results of the matrix is not possible. This is because the weights given to each of the factors will vary by interest group and will affect the outcome of any comparison based upon the unique combination of weights given to each of the factors. What can be accomplished at this time through use of the matrix, however, is an evaluation based upon an assumption of equal weights for each evaluation measure as well as an analysis based upon a set of critical technical criteria chosen from the total list of evaluation measures represented on the matrix.

-- Evaluation of alternatives based upon equal weights for each evaluation measure:

Alternative Number 1 is best (or equal to the best) for 12 measures.

Alternative Number 2 is best (or equal to the best) for 31 measures.

Alternative Number 3 is best (or equal to the best) for 14 measures.

Alternative Number 4 is best (or equal to the best) for seven measures.

Alternative Number 1 has no significant effect on 14 measures.

Alternative Number 2 has no significant effect on 21 measures.

Alternative Number 3 has no significant effect on 10 measures.

Alternative Number 4 has no significant effect on six measures.

The results of totaling the "best" and "no significant effect" results are as follows (may represent double counting in certain instances):

Alternative Number 1 - 26 measures

Alternative Number 2 - 52 measures

Alternative Number 3 - 24 measures

Alternative Number 4 - 13 measures

Based upon this analysis, Alternative Number 2 is best with Alternatives Numbers 3 and 1 ranking 2 and 3, respectively, and Alternative Number 4 being least favorable.

-- Evaluation of alternatives based upon an evaluation of 13 critical measures:

The measures utilized in this evaluation are as follows:

Measure	Criterion
1	Congestion
3	Access to Properties
4	Directness of Circulation
8	Traffic Intrusion
10	Workability
18	Construction Cost
19	Land Acquisition Cost
21	Impact on Stuart Street Merchants
24	Impact on Boylston Street Merchants
34	Impact on Back Bay
37	Impact on John Hancock
38	Impact on 57 Development
43	Impact on Central Business District

For these 13 critical measures, Alternative Number 1 is best for five measures, Alternative Number 2 is best for 11 measures, Alternative Number 3 is best for six measures, and Alternative Number 4 is best for three measures (best indicates ranking highest or tied with other alternatives for the high ranking). For the two critical measures for which Alternative Number 2 does not rank highest, it ranks as second best. This indicates that, based upon an analysis of the 13 critical measures noted above, Alternative Number 2 (English Boylston) is the best.

Since both an evaluation of all measures (assuming the weights of the measures are equal) and an evaluation of 13 critical measures (also assuming the weight of each measure to be equal) have indicated that Alternative Number 2 is best, it is useful to examine those measures for which Alternative Number 2 is not best to determine if any significant negative effects would result from implementing this alternative:

-- Alternative Number 2 ranks second in terms of "Number of Additional Turns for Major Traffic Flows." This fact is not felt to be significant since, even though this results in a greater increase in vehicle miles of travel than Alternative Number 1 (the best alternative in terms of travel for major traffic flows and vehicle miles of travel), Alternative Number 2 is best in terms of travel time. This indicates that while major traffic flows will travel slightly farther with Alternative Number 2, the total travel time will be less due to reduced waiting time at intersections.

-- Alternative Number 2 ranks lowest in terms of legal parking spaces eliminated since 33 spaces will be eliminated adjacent to the Public Garden with this alternative. Since additional off-street parking is included in the plans for the Park Plaza area and since the total number of spaces to be eliminated (33) is quite small, this fact is not deemed critical.

-- Alternative Number 2 ranks second in terms of construction cost with an estimated cost of approximately $200,000 greater than Alternative Number 3. Alternatives 1 and 4 would cost $1 to $1.5 million more than

Alternative 3. Since the construction cost of Alternative Number 2 is within $200,000 of the lowest cost alternative, this fact is not deemed critical unless Alternative Number 3 was equal to or better than Alternative Number 2 for the other measures (which it is not).

-- Alternative Number 2 causes heavier traffic flows on Boylston Street between Arlington and Charles Streets than the other alternatives since this segment of Boylston, due to its width, has the capability of handling the projected demands. This fact can be interpreted as taking advantage of the existing street system to a maximum degree. If this particular street segment is especially critical for other uses, however, this fact can count against choosing Alternative Number 2.

-- The traffic demand on Boylston between Arlington and Charles is the fact that affects the other measures where Alternative Number 2 is not ranked highest. The extent of the effect that this demand has on pedestrians crossing Boylston (which, while not detrimental to safety, will have some effect on pedestrian crossing) makes Alternative Number 2 less than the best alternative for these criteria.

It is not felt, however, that this effect on pedestrians will be significant.

In terms of what "trade-offs" exist for the community, it can be seen that a choice must be made between the necessity to widen Stuart Street and the resulting narrowing of Boylston (required for Alternative Number 4, possible for Alternative Number 1) and the necessity of using the existing width of Boylston and, therefore, not requiring widening along Stuart Street. While other "trade-offs" exist, Boylston versus Stuart is the most significant. The evaluation matrix should enable detailed "trade-off" analyses to be considered for each unique situation raised by each interest group.

Based upon the analysis described above, which results in an essentially unbiased appraisal of the impacts of all al-

ternatives, Alternative Number 2 appears to be best. The results of this analysis have the significant reservation that all measures were assumed equal in weight. Each interest group which examines the evaluation matrix will represent a unique point of view in terms of which evaluation criteria and measures are most important. Any one alternative may appear best based upon which criteria and measures are considered important and critical to the evaluator. It is felt, however, that a detailed examination of the evaluation matrix and the supporting documentation will provide the Boston Redevelopment Authority with the necessary information to decide which alternative should be considered for implementation.

Figure 13

EVALUATION MATRIX

BOSTON PARK PLAZA CIRCULATION STUDY

CRITERIA	MEASURE		ALTERNATIVE 1 (EIS SCHEME, STUART/ST. JAMES REVERSAL)	ALTERNATIVE 2 (BOYLSTON ENGLISH, CHARLES TO ARLINGTON)	ALTERNATIVE 3 (REVERSE BOYLSTON)	ALTERNATIVE 4 (REVERSE ARLINGTON)
GENERAL PUBLIC ISSUES						
1. CONGESTION	Increase in number of intersections with V/C over 1.0 at level of service C Increase in number of intersections with volume per lane greater than 500	(1)*	4	2	3	4
2. ACCESS TO PROPERTIES	Number of loading areas affected	(2)	1	NO SIGNIFICANT EFFECT	1	1
	Number of major access points removed	(3)	6	NONE REMOVED OR NEGATIVELY AFFECTED	NONE REMOVED OR NEGATIVELY AFFECTED	6
3. DIRECTNESS OF CIRCULATION EFFECT ON TRAFFIC FLOW PATTERNS	Number of additional turns for major traffic flows	(4)	2 WEST-EAST	3 WEST-EAST	5 (3 EAST-WEST, 2 WEST-EAST)	6 (2 WEST-EAST, 4 NORTH-SOUTH)
	Increase in vehicle/miles of travel in the area	(5)	111,000 ANNUAL VEHICLE MILES	241,000 ANNUAL VEHICLE MILES	439,000 ANNUAL VEHICLE MILES	345,000 ANNUAL VEHICLE MILES
	Increase in travel time for major traffic flows	(6)	59,000 ANNUAL VEHICLE HOURS	32,000 ANNUAL VEHICLE HOURS	89,000 ANNUAL VEHICLE HOURS	45,000 ANNUAL VEHICLE HOURS
	Increase in number of stops and merges for major traffic flows	(7)	4 STOPS 2 MERGES (ARLINGTON, DARTMOUTH)	1 STOP	2 STOPS 1 MERGE (ARLINGTON)	2 STOPS 1 MERGE (STUART)
4. TRAFFIC INTRUSION	Increase in vehicle/miles of travel through sensitive areas	(8)	NO SIGNIFICANT INCREASE	NO SIGNIFICANT INCREASE	109,000 ANNUAL VEHICLE MILES (BACK BAY)	NO SIGNIFICANT INCREASE
5. EFFECT ON PARKING	Number of on-street parking spaces added or removed	(9)	16 SPACES REMOVED ALONG STUART	33 SPACES REMOVED ALONG BOYLSTON	NO LEGAL SPACES REMOVED	16 SPACES REMOVED ALONG STUART
6. WORKABILITY	Subjective evaluation of adaptability of the alternative to the Boston and Park Square situation	(10)	MODERATELY WORKABLE — DIFFICULT WEAVE	WORKABLE	DIFFICULT TO OBTAIN ACCEPTANCE OF REVERSED BOYLSTON	MODERATELY WORKABLE — SIGNIFICANT VERSION OF SOUTHBOUND ARLINGTON
7. SAFETY	Increase/decrease in number of conflict points for major traffic flows	(11)	INCREASE: 1 (ARLINGTON) DECREASE: 1 (ST. JAMES/ARLINGTON)	DECREASE: 1 (ST. JAMES/ARLINGTON)	INCREASE: 1 (ARLINGTON) DECREASE: 1 (ST. JAMES/ARLINGTON)	DECREASE: 1 (ST. JAMES/ARLINGTON)
8. EFFECT ON STREETS OUTSIDE OF AREA	Number of miles of street affected (handling diverted traffic or having traffic diverted from it) other than Boylston/St. James/Stuart	(12)	NO SIGNIFICANT EFFECT	NO SIGNIFICANT EFFECT	BACK BAY STREETS NEGATIVELY AFFECTED ESPECIALLY NEWBURY	BACK BAY STREETS MAY BE AFFECTED BY SOUTHBOUND ARLINGTON
9. EFFECT ON PEDESTRIANS	Number of feet of sidewalk increased/decreased in width	(13)	800' REMOVAL NORTH SIDE OF STUART; 800' DECREASE SOUTH SIDE	NO DECREASE REQUIRED	NO DECREASE REQUIRED	800' REMOVED NORTH SIDE OF STUART; 800' DECREASE SOUTHSIDE
	For major pedestrian flows, the number of improved crossings	(14)	ONE AT ST. JAMES/ARLINGTON (SIGNAL REQUIRED)	ONE AT ST. JAMES/ARLINGTON	ONE AT ST. JAMES/ARLINGTON (SIGNAL REQUIRED)	ONE AT ST. JAMES/ARLINGTON
	For major pedestrian flows, the number of crossings made worse	(15)	ACROSS STUART	ACROSS BOYLSTON	ACROSS BOYLSTON	ACROSS STUART
10. EMERGENCY VEHICLE FLOWS	Increase/decrease distance in travel for emergency vehicles	(16)	INCREASE EASTBOUND	INCREASE WESTBOUND	INCREASE WESTBOUND	INCREASE WESTBOUND, SOUTH END
	Increase/decrease in number of congested intersections traversed by emergency vehicles	(17)	MINOR INCREASE	MINOR INCREASE	MINOR INCREASE	MINOR INCREASE
11. COSTS	Construction Cost	(18)	$1.5-2.0 MILLION	$400,000-$600,000	$200,000-$400,000	$1.5-$1.8 MILLION
	Land acquisition cost	(19)	R/W MAY BE REQUIRED ALONG STUART; R/W REQUIRED FOR CHARLES ST.	R/W FOR CHARLES ST.	R/W FOR CHARLES ST.	R/W MAY BE REQUIRED ALONG STUART; R/W REQUIRED FOR CHARLES
SPECIFIC DEVELOPMENT ISSUES						
12. IMPACT ON PARK PLAZA	Number (%) of vehicles affected to and from the development (positively/negatively)	(20)	20% NEGATIVE DUE TO WEAVE ON ARLINGTON	NO SIGNIFICANT EFFECT	5% NEGATIVE DUE TO STUART ST. VOLUMES	5% NEGATIVE DUE TO SOUTHBOUND ARLINGTON REROUTE
13. IMPACT ON STUART STREET MERCHANTS	Number (%) of vehicles affected to and from Stuart Street (positively/negatively)	(21)	APPROXIMATELY 50% NEGATIVELY AFFECTED	NO SIGNIFICANT EFFECT	NO SIGNIFICANT EFFECT	APPROXIMATELY 50% NEGATIVELY AFFECTED
	Pedestrian access improved/made worse	(22)	WORSE BETWEEN ARLINGTON & CHARLES	NO SIGNIFICANT EFFECT	NO SIGNIFICANT EFFECT	WORSE BETWEEN ARLINGTON & CHARLES
	Number of vehicles using Stuart Street	(23)	> 2200 VPH IN PEAK PERIODS	> 1400 VPH IN PEAK PERIODS	> 1800 VPH IN PEAK PERIODS	> 2000 VPH IN PEAK PERIODS
14. IMPACT ON BOYLSTON STREET MERCHANTS	Number (%) of vehicles affected to and from Boylston Street (positively/negatively)	(24)	NO SIGNIFICANT EFFECT	NO SIGNIFICANT EFFECT	100% AFFECTED — TOTAL SHIFT IN ACCESS PATTERN	NEGATIVE EFFECT TO AND FROM BACK BAY
	Pedestrian access improved/made worse	(25)	NO SIGNIFICANT EFFECT	WORSE: ARLINGTON — CHARLES	IMPROVEMENT WEST OF ARLINGTON	WORSE: ARLINGTON-CHARLES
	Number of vehicles using Boylston Street	(26)	1200-1900 VPH DURING PEAK PERIODS	1200-2300 VPH DURING PEAK PERIODS	900-1800 VPH DURING PEAK PERIODS	1000-2200 VPH DURING PEAK PERIODS
15. IMPACT ON THEATER DISTRICT	Number (%) of vehicles affected to and from the Theater District (theaters and parking) (positively/negatively)	(27)	NO SIGNIFICANT EFFECT	NO SIGNIFICANT EFFECT	NO SIGNIFICANT EFFECT	POTENTIAL NEGATIVE EFFECT ALONG SOUTHBOUND TREMONT
	Traffic volume increase/decrease on Tremont near theaters	(28)	NO SIGNIFICANT EFFECT	NO SIGNIFICANT EFFECT	NO SIGNIFICANT EFFECT	NO SIGNIFICANT EFFECT
16. IMPACT ON TUFTS UNIVERSITY MEDICAL CENTER	Number (%) of vehicles affected to and from the medical center (positively/negatively)	(29)	30% NEGATIVELY AFFECTED	NO SIGNIFICANT EFFECT	30% NEGATIVELY AFFECTED	30% NEGATIVELY AFFECTED
	Traffic volume increase/decrease on Washington Street at Tufts	(30)	NO SIGNIFICANT EFFECT	NO SIGNIFICANT EFFECT	NO SIGNIFICANT EFFECT	POTENTIAL INCREASE
17. IMPACT ON ST. JAMES AVENUE PROPERTY OWNERS	Number (%) of vehicles affected to and from St. James Avenue (positively/negatively)	(31)	ALL THROUGH TRAFFIC NEGATIVELY AFFECTED	NO SIGNIFICANT EFFECT	NO SIGNIFICANT EFFECT UNLESS REDESIGNATED	ALL THROUGH TRAFFIC NEGATIVELY AFFECTED
	Traffic volume increase/decrease on St. James Avenue)	(32)	15% INCREASE	8% INCREASE	9% INCREASE UNLESS REDESIGNATED	8% INCREASE
	Pedestrian access improved/made worse	(33)	MODERATELY WORSE	MODERATELY WORSE	MODERATELY WORSE UNLESS REDESIGNATED	MODERATELY WORSE
18. IMPACT ON BACK BAY RESIDENTS	Vehicle miles of travel increase/decrease in the Back Bay area	(34)	NO SIGNIFICANT EFFECT	NO SIGNIFICANT EFFECT	100,000 ANNUAL VEHICLE MILE INCREASE	POTENTIAL INCREASE
	Number (%) of affected vehicles to and from the Back Bay (positively/negatively)	(35)	NO SIGNIFICANT EFFECT	NO SIGNIFICANT EFFECT	BACK BAY/CBD ACCESS LESS DIRECT	BACK BAY-BAY VILLAGE LINK LESS DIRECT
19. IMPACT ON THE JOHN HANCOCK DEVELOPMENT	Number (%) of vehicles affected to and from the development, especially the parking garage (positively/negatively)	(36)	30% NEGATIVELY AFFECTED	NO SIGNIFICANT EFFECT	40% NEGATIVELY AFFECTED	15% NEGATIVELY AFFECTED
	Traffic volume increase/decrease on adjacent streets	(37)	15% INCREASE	10% INCREASE	10% INCREASE	10% INCREASE
20. IMPACT ON THE 57 DEVELOPMENT	Number (%) of vehicles affected to and from the 57 Development (positively/negatively)	(38)	NEGATIVE IMPACT ON VIRTUALLY ALL	MINOR NEGATIVE IMPACT TO 40%	NEGATIVE IMPACT TO 40%	NEGATIVE IMPACT ON VIRTUALLY ALL
	Traffic volume increase/decrease on adjacent streets	(39)	200% INCREASE ALONG STUART	60% INCREASE ALONG STUART	140% INCREASE ALONG STUART	140% INCREASE ALONG STUART
21. IMPACT ON BAY VILLAGE RESIDENTS	Vehicle miles of travel increase/decrease in the Bay Village area	(40)	NO SIGNIFICANT EFFECT	NO SIGNIFICANT EFFECT	NO SIGNIFICANT EFFECT	NO SIGNIFICANT EFFECT
	Number (%) of vehicles affected to and from Bay Village (positively/negatively)	(41)	MINOR NEGATIVE EFFECT TO 40% (FROM WEST)	NO SIGNIFICANT EFFECT	MINOR NEGATIVE EFFECT TO 40% (FROM WEST)	NEGATIVE EFFECT TO 50% (FROM NORTH)
22. IMPACT ON CENTRAL BUSINESS DISTRICT	Number (%) of vehicles affected to and from the CBD (positively/negatively)	(42)	NO SIGNIFICANT EFFECT	NO SIGNIFICANT EFFECT	APPROXIMATELY 10% NEGATIVELY AFFECTED	NO SIGNIFICANT EFFECT
	Increase/decrease in through traffic volume	(43)	NO SIGNIFICANT EFFECT	NO SIGNIFICANT EFFECT	NO SIGNIFICANT EFFECT	NO SIGNIFICANT EFFECT
	Pedestrian access improvement/made worse	(44)	NO SIGNIFICANT EFFECT	MINOR NEGATIVE EFFECT BOYLSTON, ARLINGTON TO CHARLES	MINOR NEGATIVE EFFECT BOYLSTON, ARLINGTON TO CHARLES	IMPROVEMENT DUE TO BOYLSTON NARROWING
24. IMPACT ON MBTA	Pedestrian access to stations improved/made worse	(45)	NO SIGNIFICANT EFFECT	MINOR NEGATIVE EFFECT	MINOR NEGATIVE EFFECT	POTENTIAL IMPROVEMENT
23. IMPACT ON MASS. TURNPIKE	Number (%) of vehicles affected to and from the turnpike (positively/negatively)	(46)	NEGATIVE EFFECT FOR ALL STUART ST. THROUGH TRAFFIC	NO SIGNIFICANT EFFECT	NEGATIVE EFFECT FOR ALL WESTBOUND THROUGH TRAFFIC	NO SIGNIFICANT EFFECT

* REFERS TO NUMBERED EXPLANATION IN TEXT.

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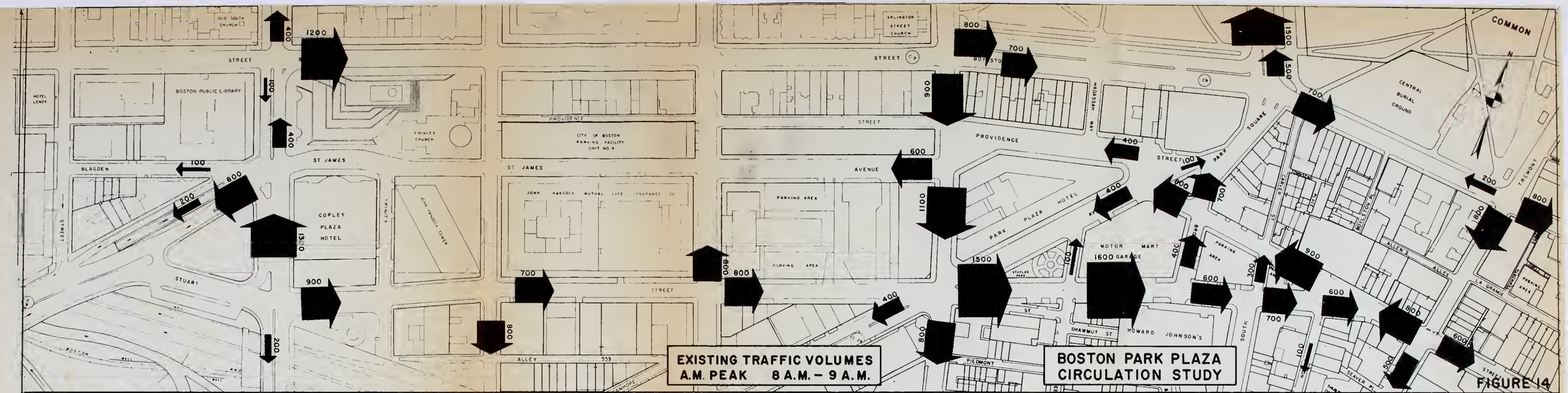
EXISTING TRAFFIC VOLUMES
A.M. PEAK 8 A.M. – 9 A.M.
BOSTON PARK PLAZA
CIRCULATION STUDY
FIGURE 14
EXISTING TRAFFIC VOLUMES
P.M. PEAK 5 P.M. – 6 P.M.
BOSTON PARK PLAZA
CIRCULATION STUDY
FIGURE 15